

WHAT IS CLAIMED IS:

1. A subminiature bone conduction speaker using a vibrating plate comprising:

a body having a shape of a cylinder of which upper portion is opened;

5 a yoke which is disposed in a lower portion of the body and of which center has a protrusion;

a ring type magnet which is formed on the edge of the yoke and apart from an end portion of the protrusion by a predetermined clearance;

an upper plate which is formed on the magnet;

10 a mastoid which is contacted to bone conduction of a user and by which vibration is transmitted to the user;

an acoustic vibrating plate which is inserted at a lower side of the mastoid to cover the opening portion of the body and which is made of an elastic material;

15 an auxiliary vibrating plate which is inserted under the acoustic vibrating plate which is inserted to the mastoid;

a voice coil which is attached to the auxiliary vibrating plate and which is inserted between the end portion of the protrusion of the yoke and the ring type magnet;

a front cap for fixing the acoustic vibrating plate on the body; and

20 an electrical signal input unit for inputting an electric signal to the voice coil.

2. A subminiature bone conduction speaker using a vibrating plate according to claim 1, wherein a howling preventing hole is formed in at least position of the
25 mastoid and the auxiliary vibrating plate.

3. A subminiature bone conduction speaker using a vibrating plate according to claim 1, wherein the acoustic vibrating plate is made of beryllium copper.
- 5 4. A subminiature bone conduction speaker using a vibrating plate according to claim 1, wherein the ring type magnet is made of Nd material.
5. A subminiature bone conduction speaker using a vibrating plate according to claim 1,
- 10 wherein one end and the other end of the voice coil are connected with an outgoing line, and
- wherein the outgoing line is passed through a through hole formed in the body and is connected to a connection terminal formed on an outer side of the body.
- 15 6. A mobile phone having a bone conduction speaker, wherein the bone conduction speaker comprising of:
- a body having a shape of a cylinder of which upper portion is opened;
 - a yoke which is disposed in a lower portion of the body and of which
 - 20 center has a protrusion;
 - a ring type magnet which is formed on the edge of the yoke and apart from an end portion of the protrusion by a predetermined clearance;
 - an upper plate which is formed on the magnet;
 - a mastoid which is contacted to bone conduction of a user and by which
 - 25 vibration is transmitted to the user;

an acoustic vibrating plate which is inserted at a lower side of the mastoid to cover the opening portion of the body and which is made of an elastic material;

an auxiliary vibrating plate which is inserted under the acoustic vibrating plate which is inserted to the mastoid;

5 a voice coil which is attached to the auxiliary vibrating plate and which is inserted between the end portion of the protrusion of the yoke and the ring type magnet;

a front cap for fixing the acoustic vibrating plate on the body; and

10 an electrical signal input unit for inputting an electric signal to the voice coil.